CLAIMS

What is claimed is:

1.   A process for recovering and beneficially treating cellulosic fiber from

5   compacted waste material containing waste paper in which before fibrillation of the

waste paper the waste material is confined in a closed chamber containing a

beneficially treating fluid comprising one or more cycles of the consecutive steps of:

a) adding additional beneficially treating fluid to said closed chamber and

b) removing beneficially treating fluid from said pressure chamber.

10   2.   A process for recovering cellulosic fiber from compacted waste material

containing waste paper in which before fibrillation of the waste paper the waste material

is confined in a closed chamber containing a debonding liquid comprising one or more

cycles of the consecutive steps of:

a) adding additional debonding liquid to said closed chamber and

15   b) removing debonding liquid from said pressure chamber.

3.   A process for recovering and beneficially treating cellulosic fiber from

compacted waste material containing waste paper in which before fibrillation of the

waste paper the waste material is confined in a closed chamber containing a

beneficially treating liquid comprising a first step of:

20   (a) adding a beneficially treating liquid into said closed chamber at a first

schedule of flow rate and removing air from said closed chamber at a second

schedule of flow rate such that the mathematical value of the quantity

$\{\Delta V_{12}/[W(1/p_1-1/p_2)]\}$ is at least the value VA in feet during the first cycle of step

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(b) below in which p_1 is a first absolute pressure in pounds per square foot in said

closed chamber at a first time and p_2 is a second absolute pressure in pounds

per square foot in said closed chamber at a second time and ΔV_{12} is the volume

in cubic feet of beneficially treating liquid added between said first time and said

5   second time and W is the dry weight in pounds of said compacted waste material

and where the value of VA in feet is measured in the laboratory and concluded

from observations in the laboratory for the grade of waste material being

processed

and one or more cycles of the consecutive steps of:

10   (b) adding additional beneficially treating liquid to said closed chamber and

(c) removing beneficially treating liquid from said pressure chamber.

4.   A process for recovering and beneficially treating cellulosic fiber from

compacted waste material containing waste paper in which before fibrillation of the

waste paper the waste material is confined in a closed chamber containing a

15   beneficially treating liquid comprising a first step of:

(a) adding a beneficially treating liquid into said closed chamber at a first

schedule of flow rate and removing air from said closed chamber at a second

schedule of flow rate such that the average pressure at the midpoint in the closed

chamber is at least the value PA and where the value of PA is measured in the

20   laboratory and concluded from observations in the laboratory for the grade of

waste material being processed

and one or more cycles of the consecutive steps of:

(b) adding additional beneficially treating liquid to said closed chamber and

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(c) removing beneficially treating liquid from said pressure chamber.

5.   A process for recovering cellulosic fiber from compacted waste material containing waste paper in which before fibrillation of the waste paper the waste material is confined in a closed chamber containing a debonding liquid comprising a first step of:

(a) adding a debonding liquid into said closed chamber at a first schedule of flow rate and removing air from said closed chamber at a second schedule of flow rate such that the mathematical value of the quantity $\{\Delta V_{12}/[W(1/p_1-1/p_2)]\}$ is at least the value of VA in feet during the first cycle of step (b) below in which p_1 is a first absolute pressure in pounds per square foot in said closed chamber at a first time and p_2 is a second absolute pressure in pounds per square foot in said closed chamber at a second time and ΔV_{12} is the volume in cubic feet of beneficially treating liquid added between said first time and said second time and W is the dry weight in pounds of said compacted waste material and where the value of VA in feet is measured in the laboratory and concluded from observations in the laboratory for the grade of waste material being processed and one or more cycles of the consecutive steps of:

(b) adding additional debonding liquid to said closed chamber and

(c) removing debonding liquid from said pressure chamber.

6.   A process for recovering cellulosic fiber from compacted waste material containing waste paper in which before fibrillation of the waste paper the waste material is confined in a closed chamber containing a debonding liquid comprising a first step of:

(a) adding a debonding liquid into said closed chamber at a first schedule of flow rate and removing air from said closed chamber at a second schedule of flow

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rate such that the average pressure at the midpoint in the closed chamber is at least the value PA and where the value of PA is measured in the laboratory and concluded from observations in the laboratory for the grade of waste material being processed

5   and one or more cycles of the consecutive steps of:

(b) adding additional debonding liquid to said closed chamber and

(c) removing debonding liquid from said pressure chamber.

7.   A process for recovering cellulosic fiber from compacted OCC in which before fibrillation of the OCC the OCC is confined containing a weak caustic solution in

10   a closed chamber comprising a first step of:

(a) adding weak caustic solution into said closed chamber at a first schedule of flow rate and removing air from said closed chamber at a second schedule of flow rate such that the mathematical value of the quantity $\{\Delta V/[W(1/p_1-1/p_2)]\}$ is at least 1.27 feet during the first cycle of step (b) below in which p_1 is a first

15   absolute pressure in pounds per square foot in said closed chamber at a first time and p_2 is a second absolute pressure in pounds per square foot in said closed chamber at a second time and ΔV is the volume in cubic feet of debonding liquid added between said first time and said second time and W is the dry weight in pounds of said compacted OCC

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and one or more cycles of the consecutive steps of:

(b) adding additional weak caustic solution to said closed chamber and

(c) removing weak caustic solution from said pressure chamber.

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8. A process for recovering cellulosic fiber from compacted OCC in which before fibrillation of the OCC the compacted OCC is in a closed chamber confined containing a weak caustic solution comprising a first step of:

(a) adding weak caustic solution into said closed chamber at a first schedule of

5   flow rate and removing air from said closed chamber at a second schedule of

flow rate such that the average pressure at the midpoint in the closed chamber is

at least 160 mmHg absolute

and one or more cycles of the consecutive steps of:

(b) adding additional weak caustic solution to said closed chamber and

10   (c) removing weak caustic solution from said pressure chamber.

9. A process for recovering cellulosic fibers from compacted waste material containing waste paper in which before fibrillation the waste material is confined in a closed pressure chamber containing a fiber debonding liquid comprising one or more cycles of the consecutive steps of:

15   (a) connecting said pressure chamber to a debonding liquid supply having a

pressure above 760 mm absolute and

(b) reducing the pressure within said pressure chamber to no more 760 mm

absolute.

10. The process of Claim 9 wherein step (b) comprises reducing the pressure

20 within said pressure chamber to within 250-600 mm absolute.